



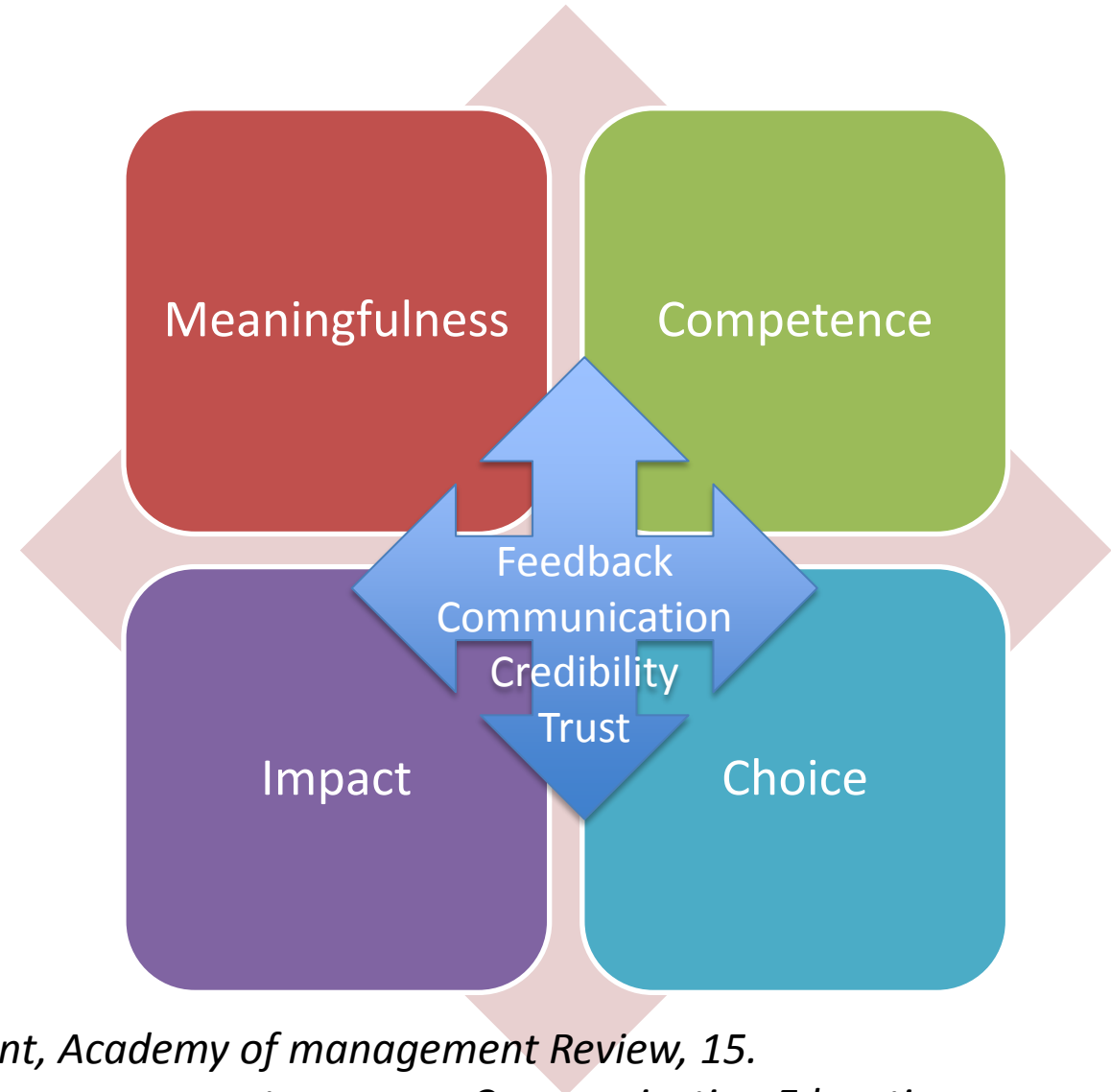
A Multilevel Approach to Student Empowerment: Examples from Biomedical Science

*Natalie Colson PhD and
Helen Naug PhD*



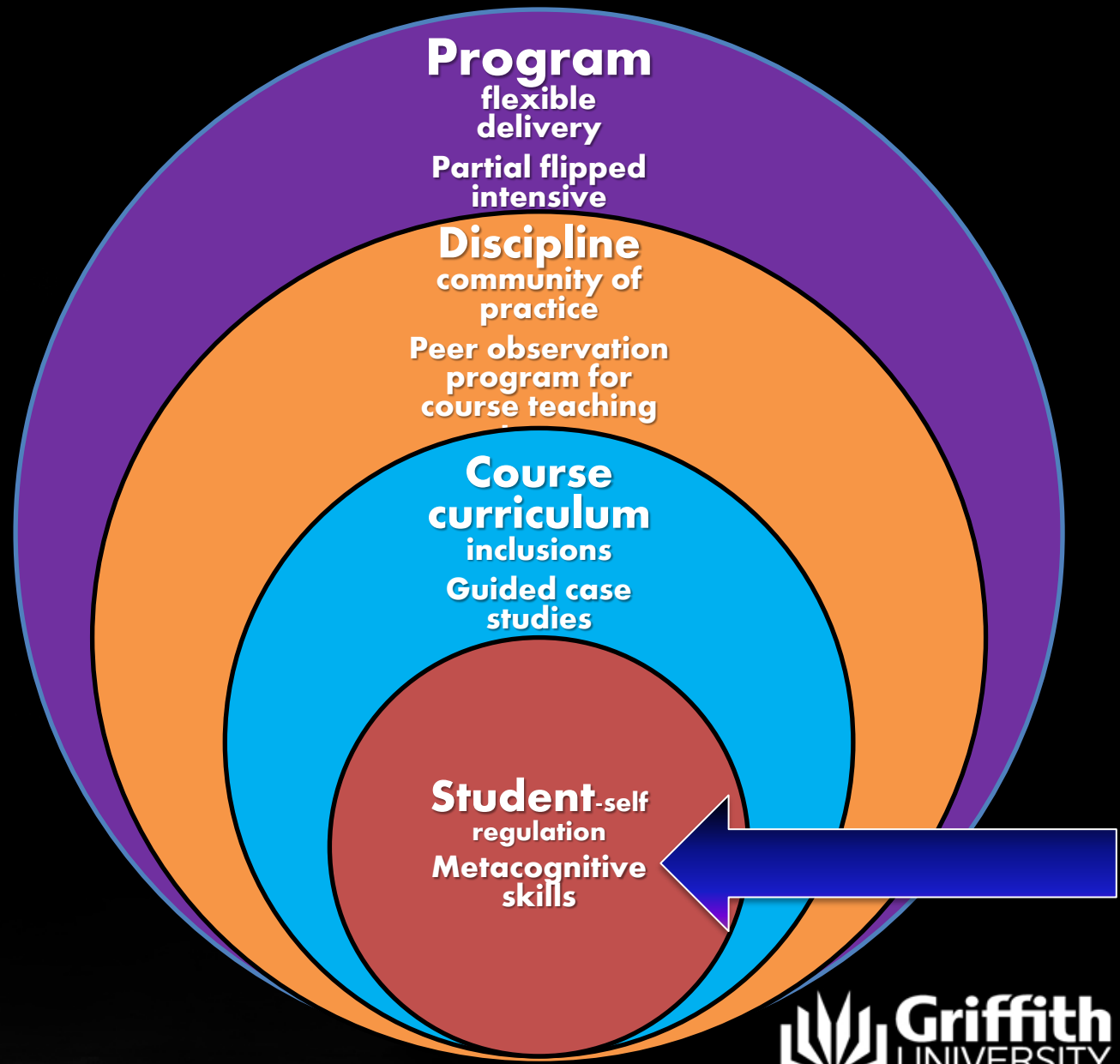
Empowerment

- Process of creating intrinsic task motivation by providing an environment and tasks which increase feelings of self-efficacy and energy



Thomas & Velthouse 1990 Cognitive elements of Empowerment, Academy of management Review, 15.

Frymier, Shulman, Houser 1996 The development of a learner empowerment measure, Communication Education, Vol 45.



**Student-self
regulation
Metacognitive
skills**



**The Problem: Resource rich
environment, but deep, active
learning? their**

Student-self
regulation
Metacognitive
skills

Metacognition is a learner's
knowledge of their own cognition
(Flavell, 1979)

*“... if somebody knows something, then
he knows that he knows it, and at the
same time he knows that he knows that
he knows.”*

(Spinoza 1632–1677)

*..some of my students don't know
something and at the same time, don't
know that they don't know it. (Naug ,2012)*

Student-self
regulation
Metacognitive
skills

Giving students the
power to regulate their
own learning

Blank page technique for learning Anatomy. Or anything really.



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Health Professions Education 2 (2016) 51–57



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Experiential Learning, Spatial Visualization and Metacognition: An
Exercise with the “Blank Page” Technique for Learning Anatomy[☆]

Helen L. Naug^{*}, Natalie J. Colson, Daniel Donner

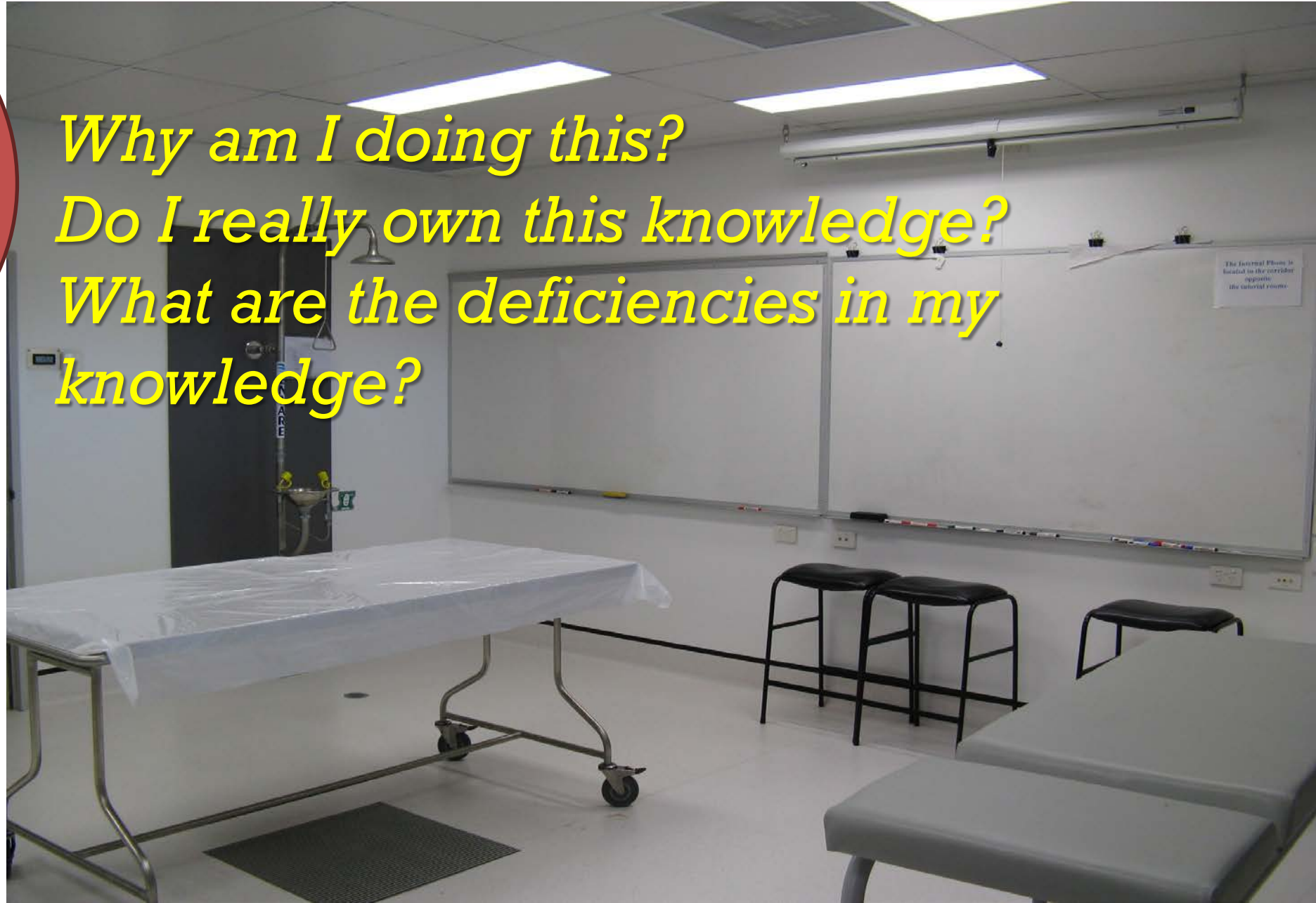
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Received 5 January 2016; accepted 17 January 2016

Available online 30 April 2016

**Student-self
regulation
Metacognitive
skills**

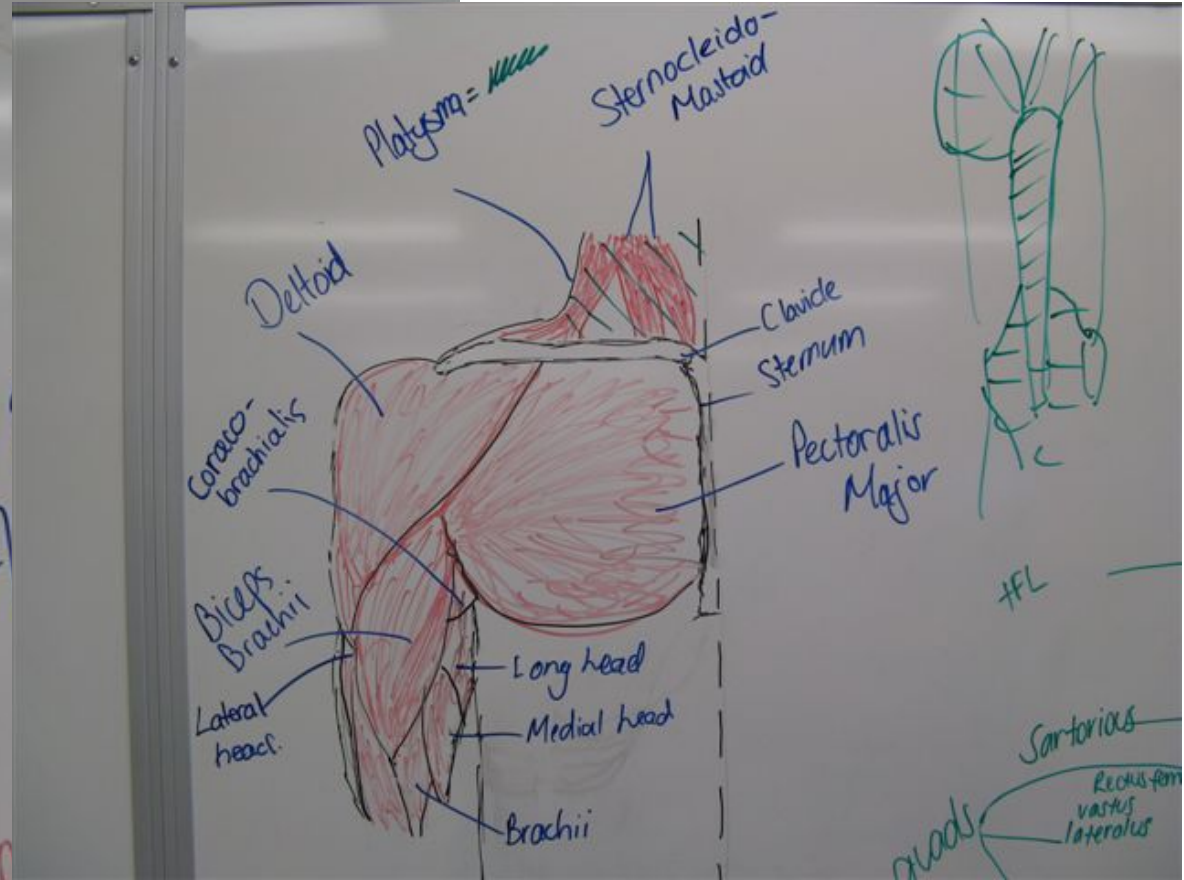
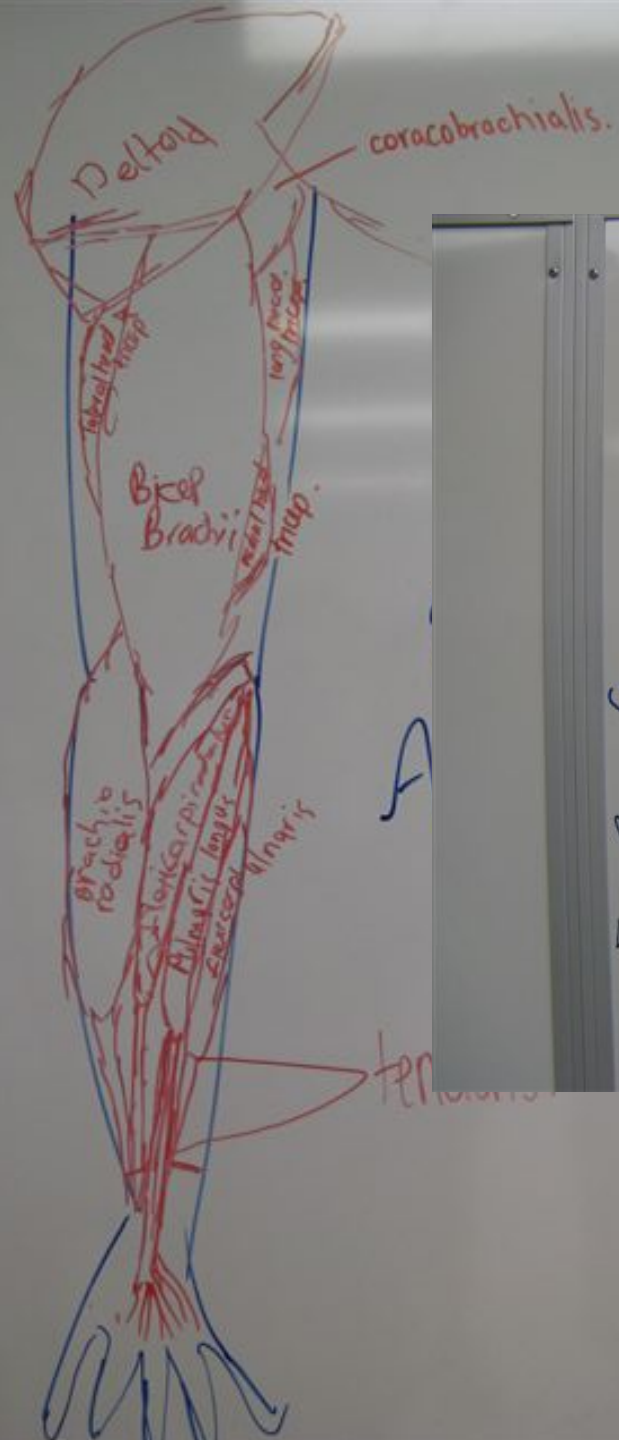
*Why am I doing this?
Do I really own this knowledge?
What are the deficiencies in my
knowledge?*



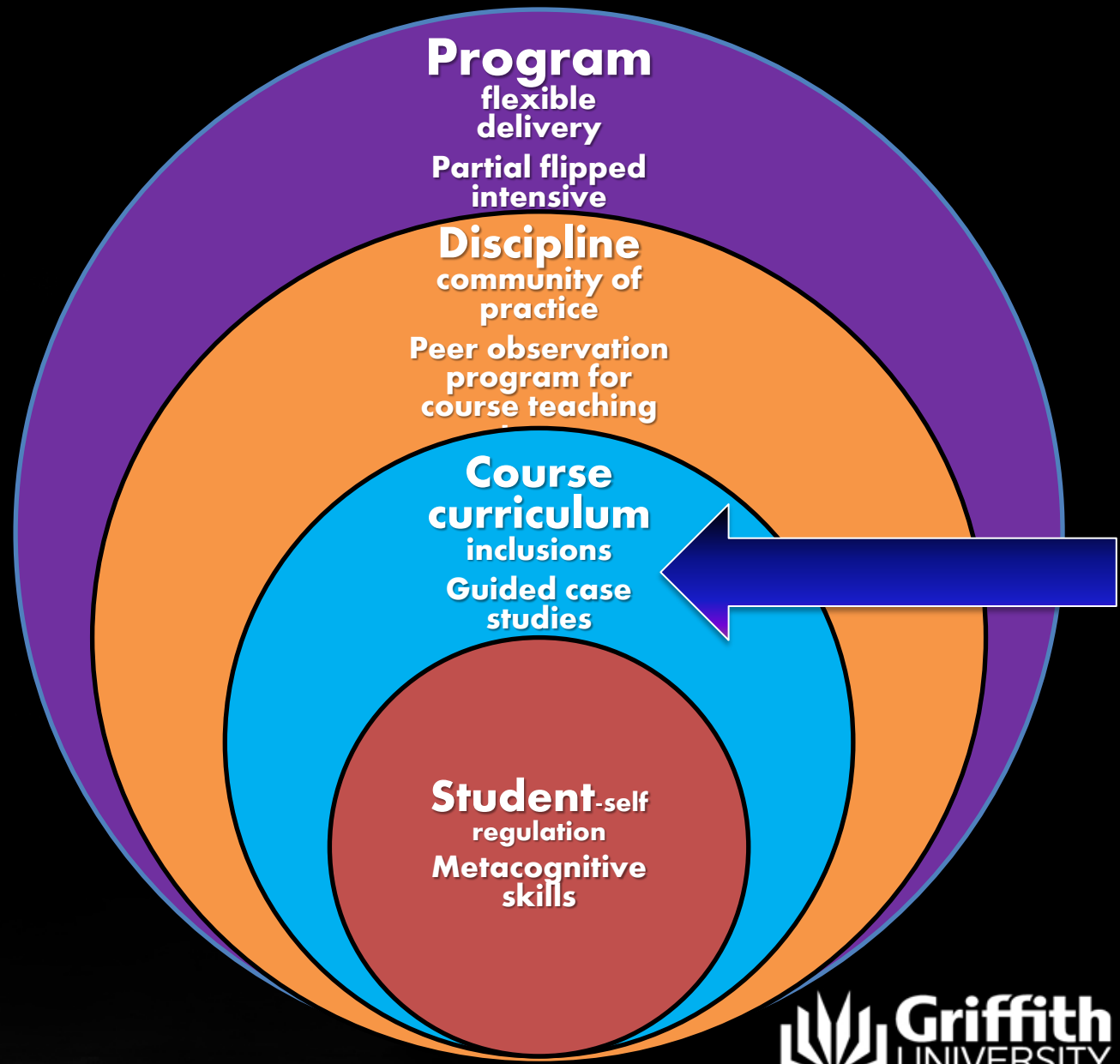
**Student-self
regulation
Metacognitive
skills**



Student-self regulation
Metacognitive skills



Question	Frequency (%)	Mode	Mean ± SD
Q1 The plasticine modeling and drawing activity assisted your learning (n = 282) (5 point scale)	-	4 (Agree)	4.18 ±0.82
Q2 How would you rank this activity as a learning tool for anatomy? (n = 282) (6 point scale)	-	5 (Very Good)	4.90 ±0.87
Q3 Circle the words that best describe your experience with plasticine modeling and drawing of skeletal features (n = 282)			
<i>Fun</i>	147 (52%)	-	-
<i>Challenging</i>	137 (48%)	-	-
<i>Relevant to lecture material</i>	97 (34%)	-	-
<i>Boring</i>	3 (1%)	-	-
<i>Tedious</i>	7 (2%)	-	-
<i>Stimulating</i>	129 (46%)	-	-
<i>Made me think</i>	174 (61%)	-	-
Q4 In order to complete the plasticine modeling and drawing activity I needed to refer to charts/anatomical models/notes (n = 281)	-	4 (Agree)	3.85 ±0.7



Course
curriculum
inclusions
Guided case
studies

Demonstrating ‘Meaning’ by the use of Case Studies

- Students appreciate meaning when we provide learning tasks that are relevant, realistic, authentic and represent the natural complexities of the ‘real world’

**Course
curriculum
inclusions**
**Guided case
studies**

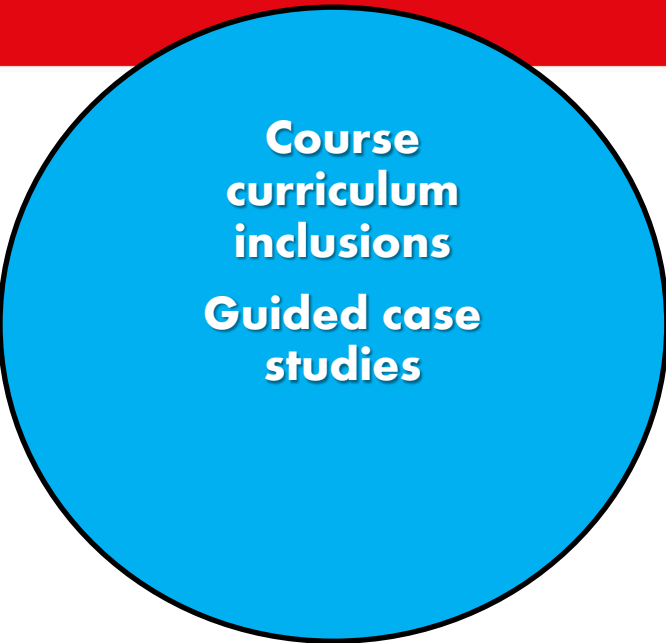
Developing 'Competence' by the use of Case Studies

- Empower students by developing mastery in
 - applying knowledge to real-world problems
 - synthesising information: eg. molecules & human disease
 - analytical skills
 - diagnostic thinking skills

Course
curriculum
inclusions
Guided case
studies

Challenge: FY Health course Genes and Disease

- **Source:** Authenticity important to demonstrate the complexities of real life
- **Approach:** Enhance working knowledge of the material, develop problem solving skills
- **Delivery & Assessment:** Integrated into curriculum, LOs & assessed



Source

Molecular Cytogenetics



Open Access

Case report

Novel complex translocation involving 5 different chromosomes in a chronic myeloid leukemia with Philadelphia chromosome: a case report

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Published: 9 November 2009

Received: 14 September 2009

Molecular Cytogenetics 2009, 2:21 doi:10.1186/1755-8166-2-21

Accepted: 9 November 2009

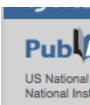
This article is available from: <http://www.molecularcytogenetics.org/content/2/1/21>

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Abstract

Background: The well-known typical fusion gene BCR/ABL can be observed in connection with a complex translocation event in only 2-10% of cases with chronic myeloid leukemia (CML). As currently most CML cases are treated with Imatinib, variant rearrangements have in general no specific prognostic significance, though the emergence of therapy resistance remains to be studied.



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Figure 3
Array-proven multicolor banding (aMCB) was applied to determine the involved in this complex rearrangement. In each lane the results of aMCB analysis using probe-sets for chromosomes 1, 4, 5, 9 and 22 are shown. The normal chromosomes are shown in the first column, the derivative of all five chromosomes in the following ones. In the light gray by aMCB-probes unstained regions on the derivative chromosomes are depicted.

Course
curriculum
inclusions

Guided
case
studies

Approach: Open-ended vs directed

Open-ended

- Involves a problem that needs solving
- Students provide a solution
- May involve complex analysis of information

Directed

- Involves a story or scenario
- Asks students specific questions that leads them to apply information just learned
- Teacher controlled

Course
curriculum
inclusions
Guided case
studies

Delivery and assessment

- Case information provided in course materials with citations and electronic links to source
- Included specific leading questions to apply information just learned + further problem/s that encouraged analytical thinking
- Teacher controlled
- Specific LOs for assessment

Integrated case-study approach

Teacher

- Carefully selected cases
- Teacher controlled
- Includes directed questions
- Easier at first
- Introduces some basic analysis
- + Extends and explores some open-ended Qs
- Revisit some cases in later topics

Case

- Real life or mimics
- Focus on specific LOs
- Links foundation knowledge to real life
- May be complex
- Assessed according to LOs

Students

- Review and apply concepts
- Develop confidence
- Apply basic analysis skills
- Attempt complex questions
- Develop clinical reasoning
- Develop diagnostic thinking
- Prepared for complex open-ended cases
- Understand expectations based on LOs

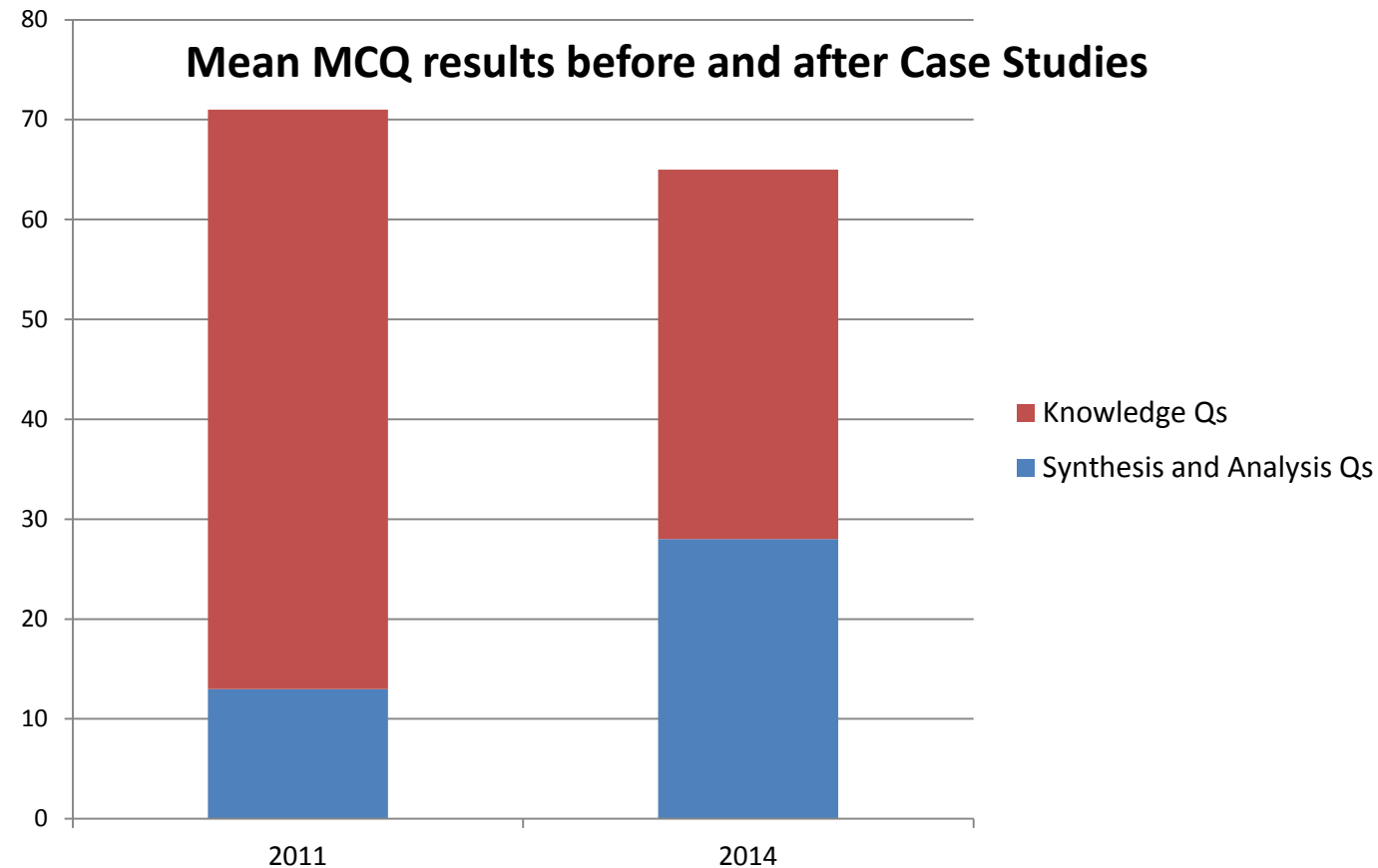
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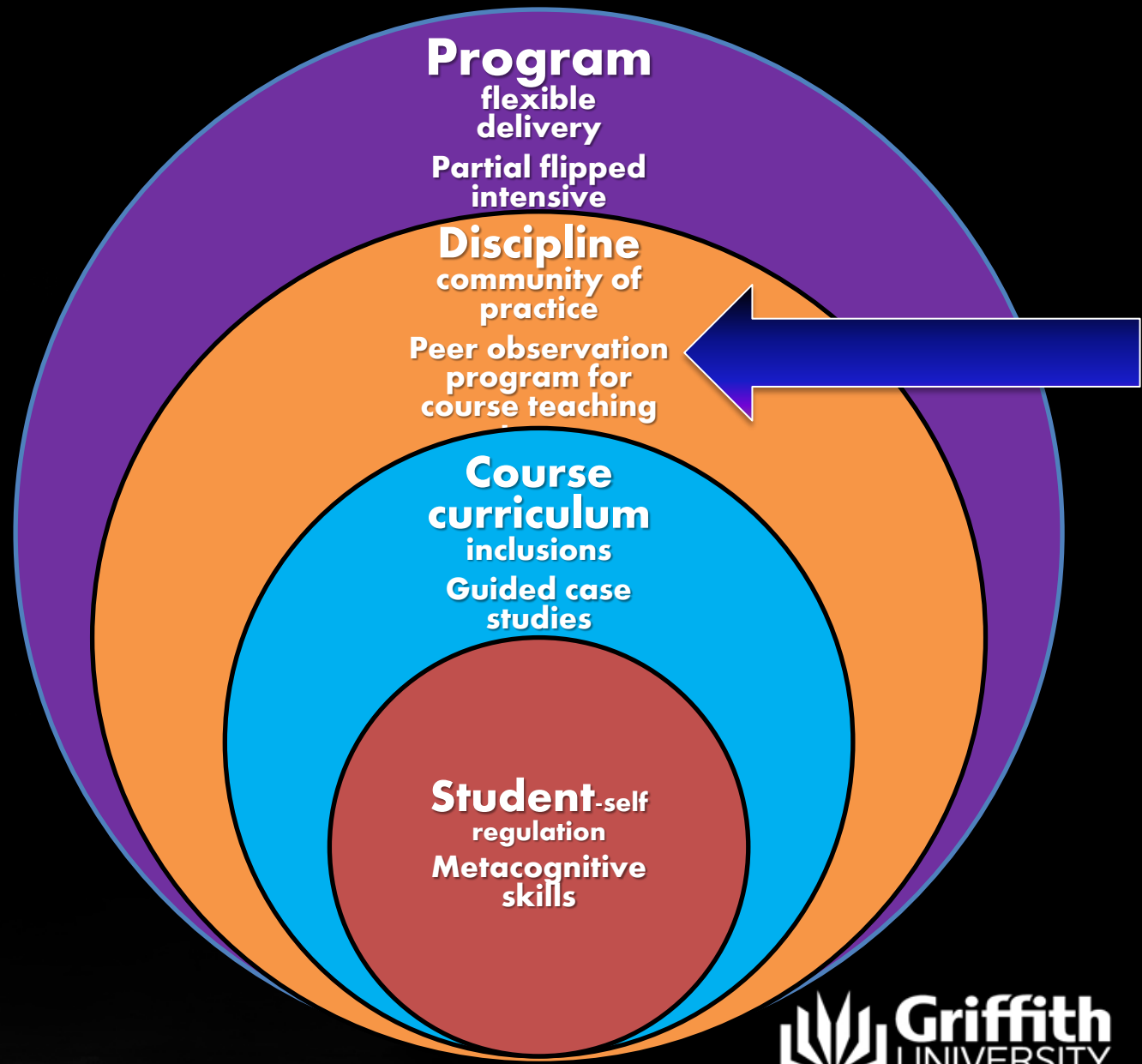
Evidence for effectiveness: meaning

- *Case studies, and examples were really interesting and comprehensive. It allowed me to really understand the content, and at the same time relate it back to the real world.*
- Case studies presented at the end of lecture content highlighted the relevance/ application of our learning.
- *The thing I liked most about this course was how at the end of each theoretical unit, there were case studies; this tied the information to real life and made a connection with why we were studying it, thus consolidating our knowledge.*
- The case studies were interesting and were a "treat" at the end of a lecture.

Course
curriculum
inclusions
Guided case
studies

Evidence for effectiveness: competence





Course/Discipline
community of practice

Peer observation
program for course
teaching team

Empowering students' learning by empowering tutors

A peer observation program for the professional development of laboratory tutors

Helen Naug¹, Natalie Colson¹, Andrew Pearson¹, Eugene DuToit¹, Grace Qi²

¹School of Medical Science, Griffith University, Australia; ²School of Languages Humanities and Social Sciences, Griffith University, Australia

Identification of a need

- **Learning & Teaching Grant 2014**
Professional Development Program for Sessional Tutors of
Bioscience Laboratories
Helen Naug, Natalie Colson, Andrew Pearson, Joss du Toit

Generic University-wide training program was not providing our tutors with the specific skills required for our learning environment. We wanted to improve the quality of our sessional tutors.



Course/Discipline
community of
practice

Peer observation
program for
course teaching
team

AIMS

- Provide a discipline-specific professional development framework for sessional tutors
- Theoretical underpinnings : Supported reflective practice (Bell,2001) and Situated learning (Lave & Wenger, 1991)
- **Develop a community of practice among FY tutors**
- Enhance the first year learning experience

Course/Discipline
community of
practice

Peer observation
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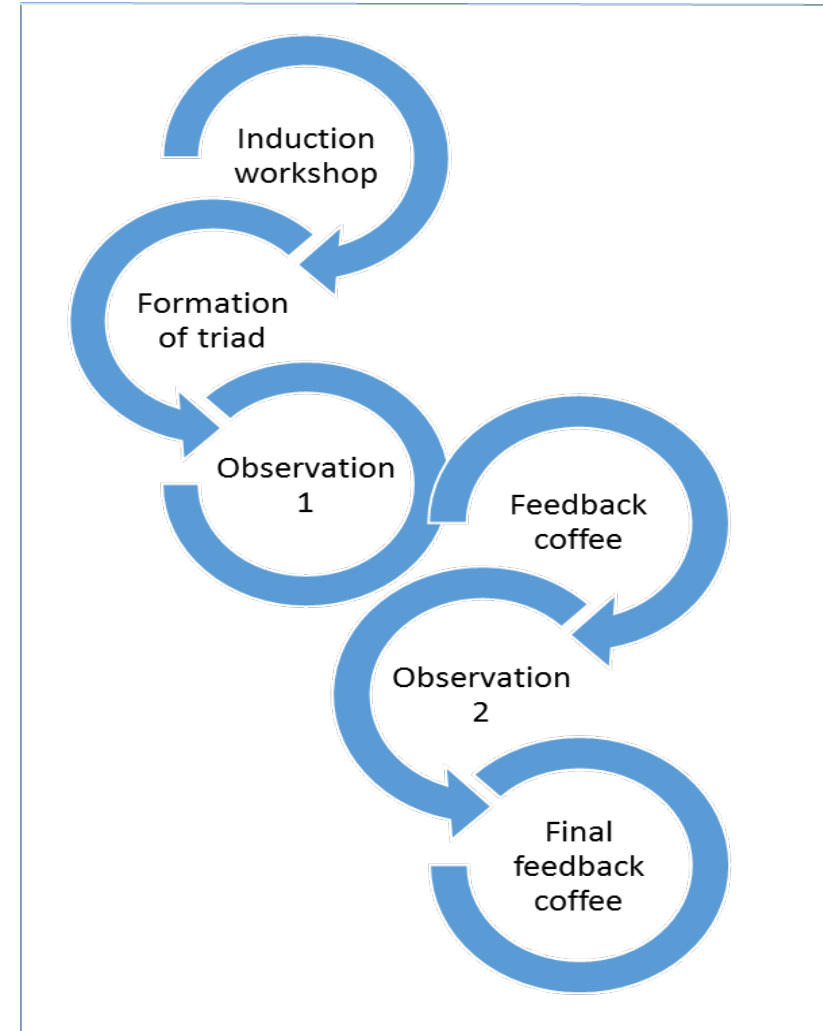
How to implement

- Recruit tutors, experienced and novice, to be part of the program & assessors
- Deliver introductory workshop
- Provide the 3P's matrix (a framework) preparation, participation, professionalism (Colson, Naug)
- Observation documents for assessors

Method

Course/Discipline
community of
practice

Peer observation
program for
course teaching
team



Plan Implement Review and Improve

Course/Discipline
community of
practice

Peer observation
program for
course teaching
team

Results: Focus group feedback

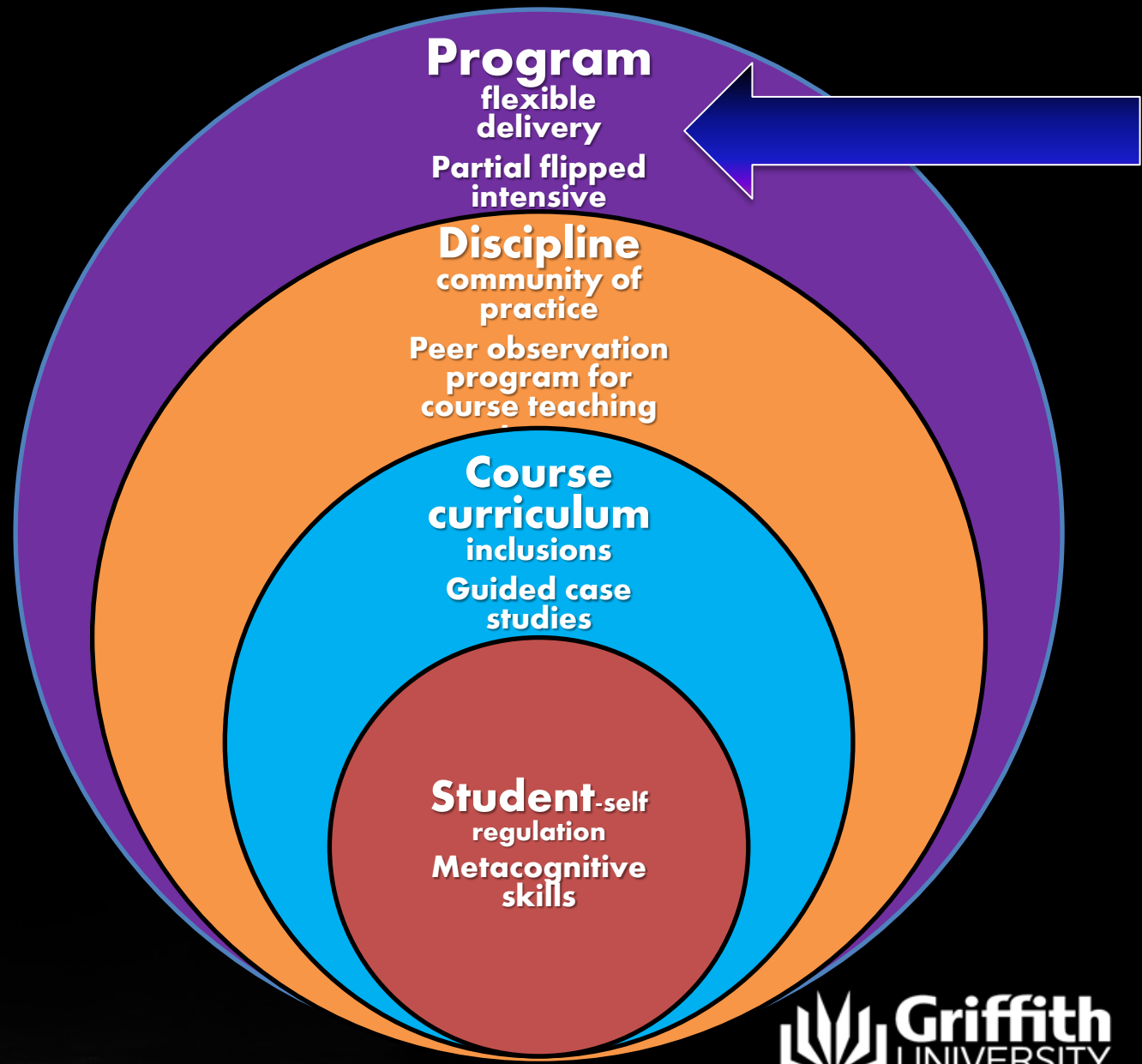
- *“In previous years there was never any critical feedback on our performance as tutors... and I always wondered how we know whether our performance is good or bad or how to improve...”*
- *“ ..I liked the structure... in that the feedback was mostly from peers with occasional senior academic staff...it wasn't like academic staff just critiquing you...from your peers you get feedback on what you normally do... you don't feel you have to put on a performance..”*
- *“It's a two-way process...you get feedback when you are observed, but when I was observing someone I realised that I could learn so much... you don't just pick up on*

**Course/Discipline
community of
practice**

**Peer observation
program for
course teaching
team**

Evidence is **not** about “good” or “bad” it **is** about amount of evidence that was observed. “Not Applicable” may be an entirely appropriate outcome in a particular circumstance. In others it may be able to be increased or developed in collaboration with peers. This metric should be justified with qualitative statements in the comments section following.

Observation dimension 1: Professionalism	Insufficient Evidence	Moderate Evidence	Significant Evidence	Not Applicable
<i>Does the tutor demonstrate and exemplify respect and awareness of health and safety obligations?</i>				
<i>Does the tutor demonstrate a friendly but professional relationship with students?</i>				
<i>Does the tutor demonstrate a professional relationship with fellow tutors?</i>				
<i>Does the tutor arrive on time and allow time for debriefing?</i>				



Program flexible
delivery
Partial flipped intensive
options

Bachelor of Biomedical Science



Foundation Year Health

- How do we 'fit' the Griffith model of flexible entry, engagement and progression, in limited trimester timeframe, and maintain quality?
- 8 core courses over first year
- Delivered to ~19 programs in Health
- Many with pre-requisites

Semester 1	Semester 2
Chemistry 1	Chemistry 2
A & P 1	A & P 2
Cells Tissues & Regulation	Genes and Disease
Biomed Data Analysis	Health Challenges of 21 st century

Colson, Naug 2016

Intensive Mode

T2, T3

Duration: 6 weeks
Delivery: on campus, flipped style; 4 hrs p/w
Labs: concurrent

Mixed Mode

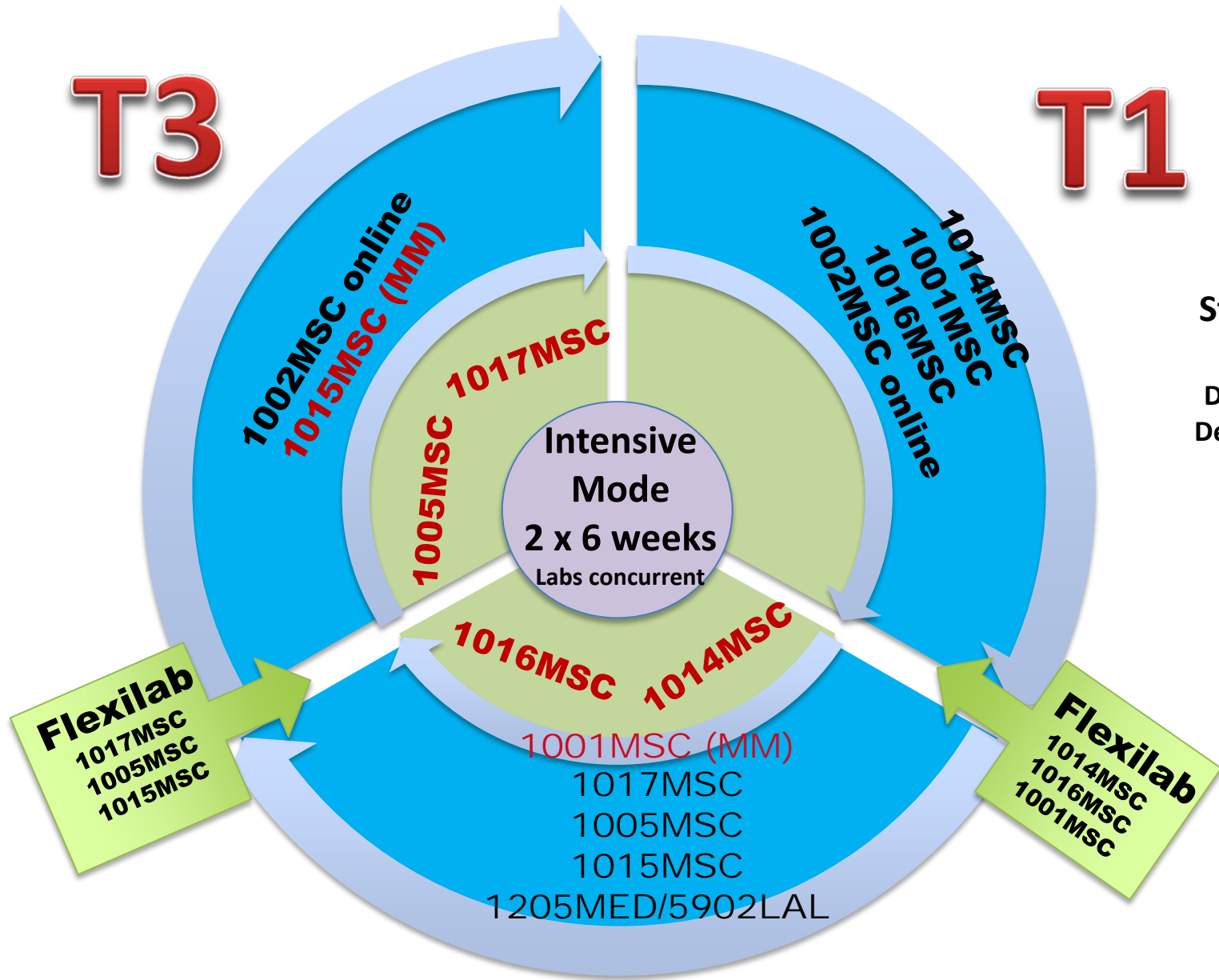
T2, T3

Duration: 12 weeks
Delivery: on campus, flipped style; 2 hrs pw
Labs: concurrent

Flexi Mode

T1, T2

Duration: 12 weeks
Delivery: On or off campus
Labs: on campus weeks 13-15
 120 student cap



Standard Mode

T1, T2

Duration: 12 weeks
Delivery: on campus,
Labs: concurrent

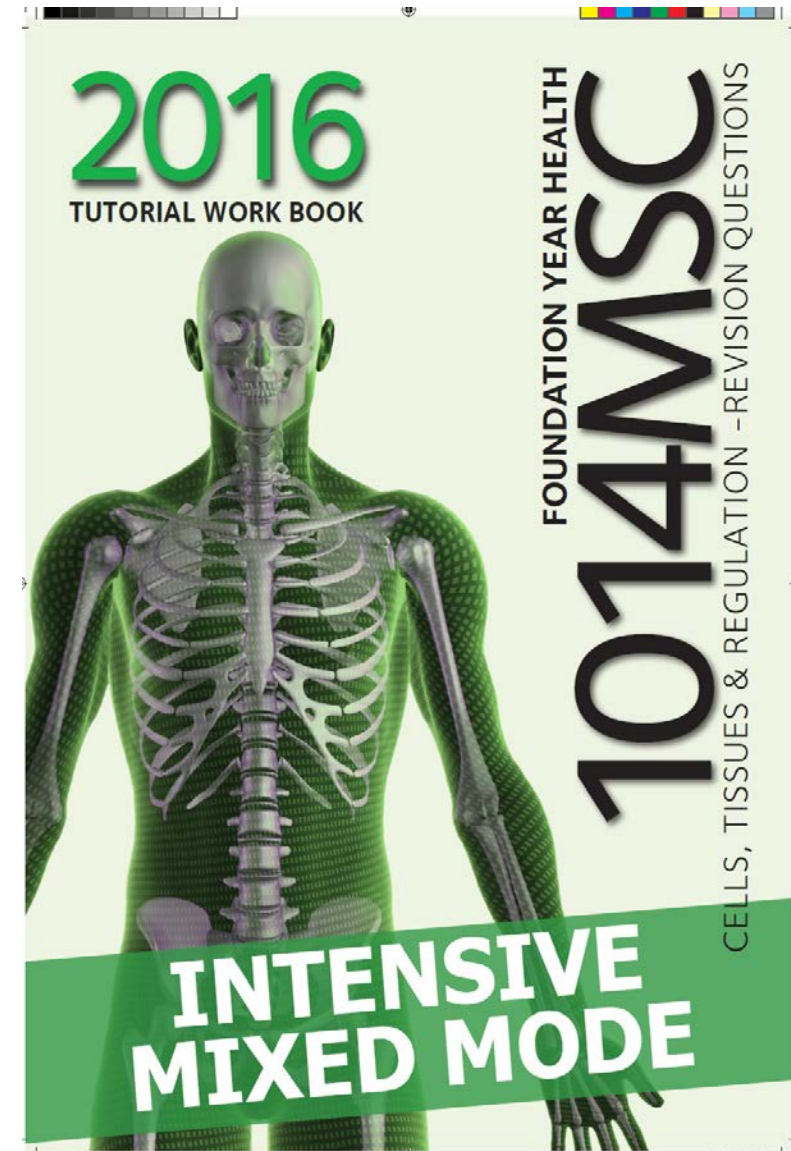
T2

Strategy

- **Successful bid** for \$500K Academic Provost's funds
- **Established team**
- **Recruit staff** for intensive and mixed mode courses
- **Develop resources** to mirror original course
- **Evaluate:** readiness to engage in online learning, compare engagement, academic success, enrolment, retention, student opinion

Resource Development

- Online mini-lectures: developed & scripted by new convenor, recorded, uploaded (12-15 videos per course) + associated quizzes
- Tutorial workbook, lab manual
- Introductory videos by convenor
- Style of Learning videos (Intensive mode, mixed mode)

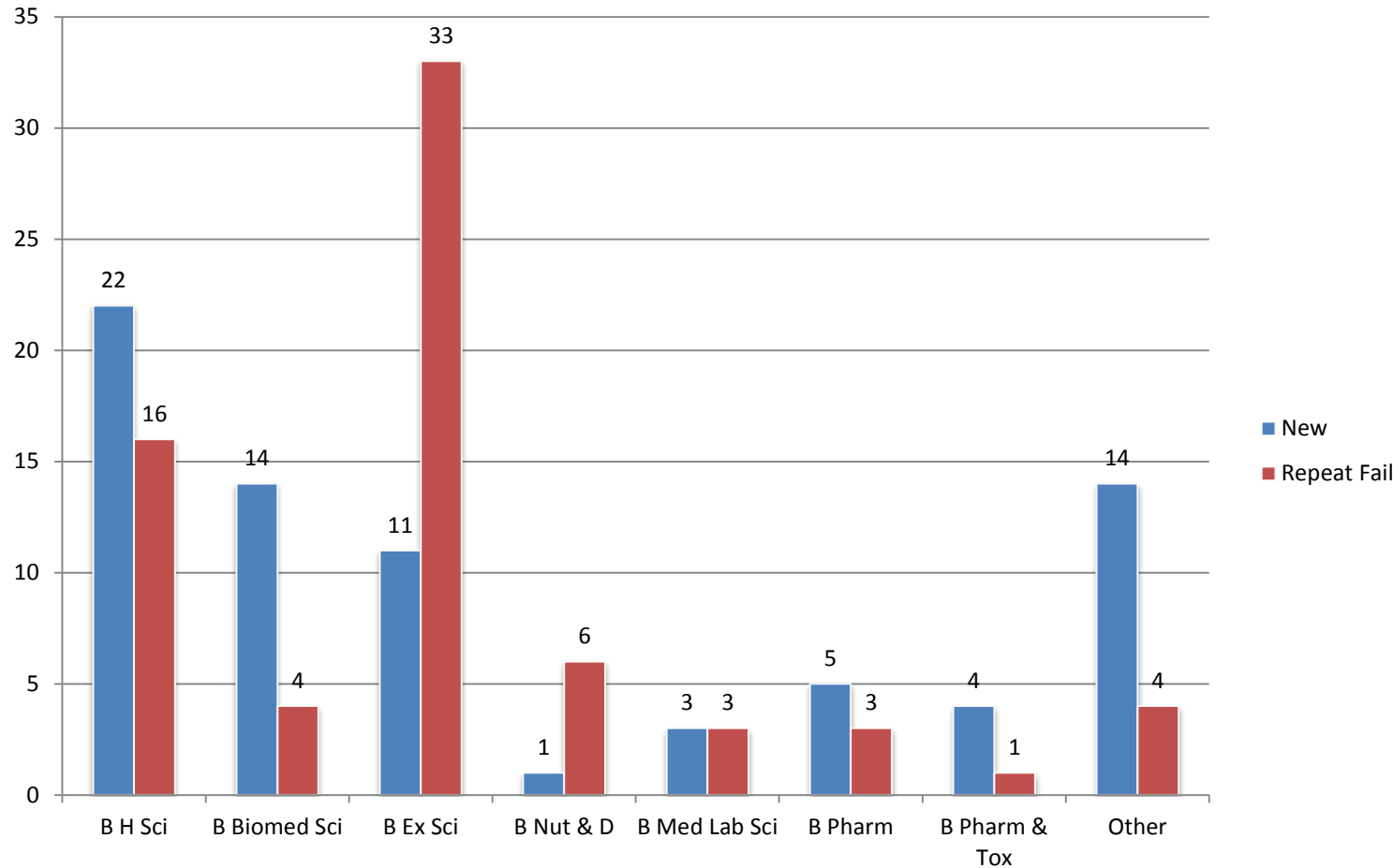


Challenges

- Resistance
- Timetabling, venues & staffing for tutes
- Time frame of urgency re:
supplementary and deferred exams
- Preparing students for new style of
learning: monitoring engagement, early
outreach



Who enrolled: 1001MSC



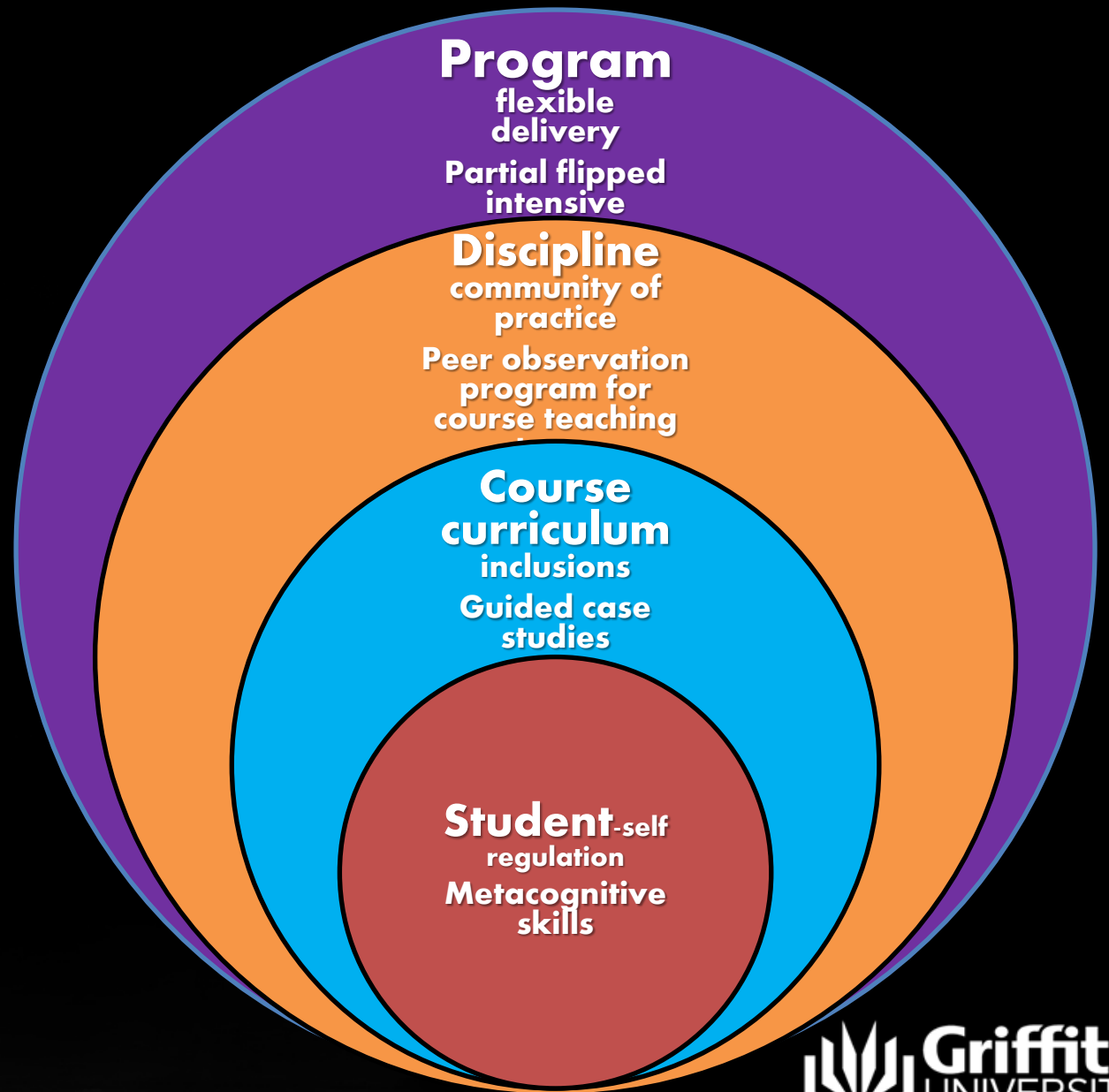
Student Feedback

What they liked

- Mini-lectures
- Weekly face to face tutorial in tutorial venue, got to know tutors and convenor, formed friendships with other students
- Workbook with questions to discuss in tutorial, helped with understanding
- Fast-paced nature of course

What was challenging

- Knowing what to expect
- Easy to get behind for intensive mode
- A lot of content for intensive mode
- Time management
- Keeping focused
- Being organised





THANK YOU

